III-15 B.01 Introduction

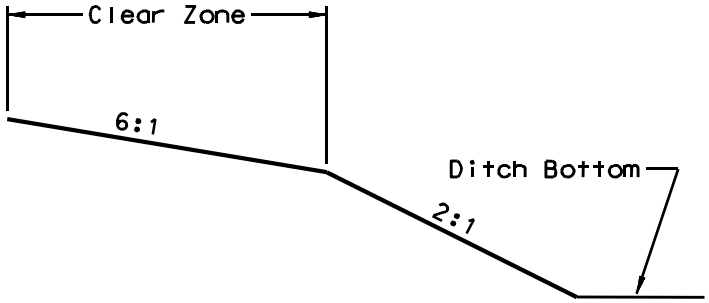
The foreslope to be used in deep fill areas (fills greater than 10') will be based upon the forecast ADT as shown in the Project Concept Report. The depth of the fill is measured from the toe of the foreslope at the tie in with the ditch bottom to the edge of the roadway.

It is the Department's policy to flatten foreslopes even though the initial cost may be greater than guardrail. The decision to flatten the foreslope or to provide guardrail is an executive decision. Therefore, when the Project Concept Report is written, both the costs for guardrail and flattening slopes should be included. The decision whether to flatten foreslopes or install guardrail should be based upon cost effectiveness, the extent of right of way impacts and the extent of wetland impacts. The use of 2:1 foreslopes as discussed in this section is applicable in areas where Materials and Research Division has deemed that soil conditions are adequate to allow the use of 2:1 foreslopes. Materials and Research Division should be consulted to determine the viability of foreslopes steeper than 3:1.

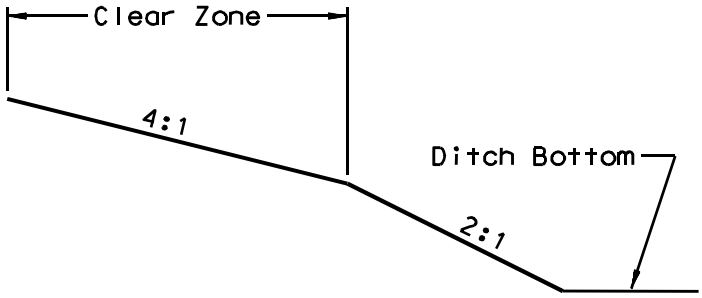
III-15 B.02 Deep Fill Areas

In deep fill areas, if the ADT is less than 2000, one of the following options should be chosen:

- Option 1: The foreslope to the clear zone will be 6:1 then 2:1 to the tie in with the ditch bottom.
- Option 2: The foreslope to the clear zone will be 4:1 then 2:1 to the tie in with the ditch bottom.



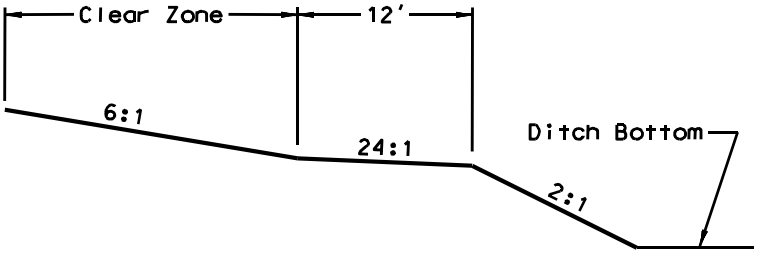
Option 1



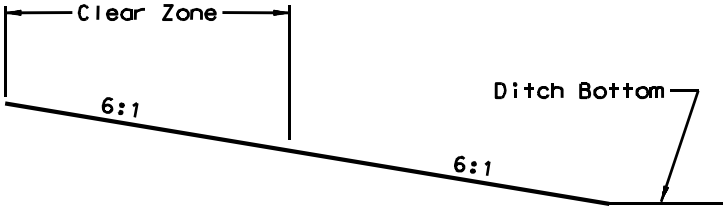
Option 2

In deep fill areas, if the ADT is 2000 or greater, one of the following options should be chosen. Generally, Option 1 will be the most cost effective option. However, if Option 2 or 3 is more cost effective, and impacts less right of way and wetlands, then that option should be chosen.

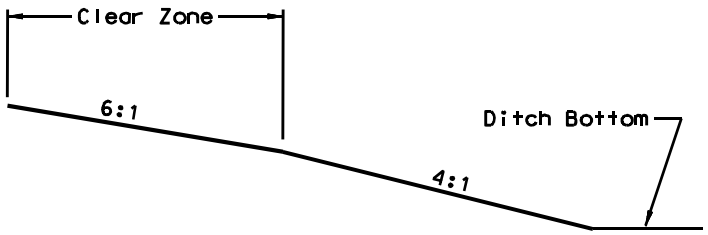
- Option 1: The foreslope to the clear zone will be 6:1, then a 12' bench at 24:1, then 2:1 to the tie in with the ditch bottom.
- Option 2: The foreslope to the clear zone will be 6:1 then continue the 6:1 to the tie in with the ditch bottom.
- Option 3: The foreslope to the clear zone will be 6:1 then 4:1 to the tie in with the ditch bottom.



Option 1



Option 2



Option 3

III-15 B.03 Deep Fill Areas with Box Culvert

Sometimes there will be a box culvert within the deep fill area. Figure 1 shows how foreslopes approaching and exiting the structure should be transitioned.

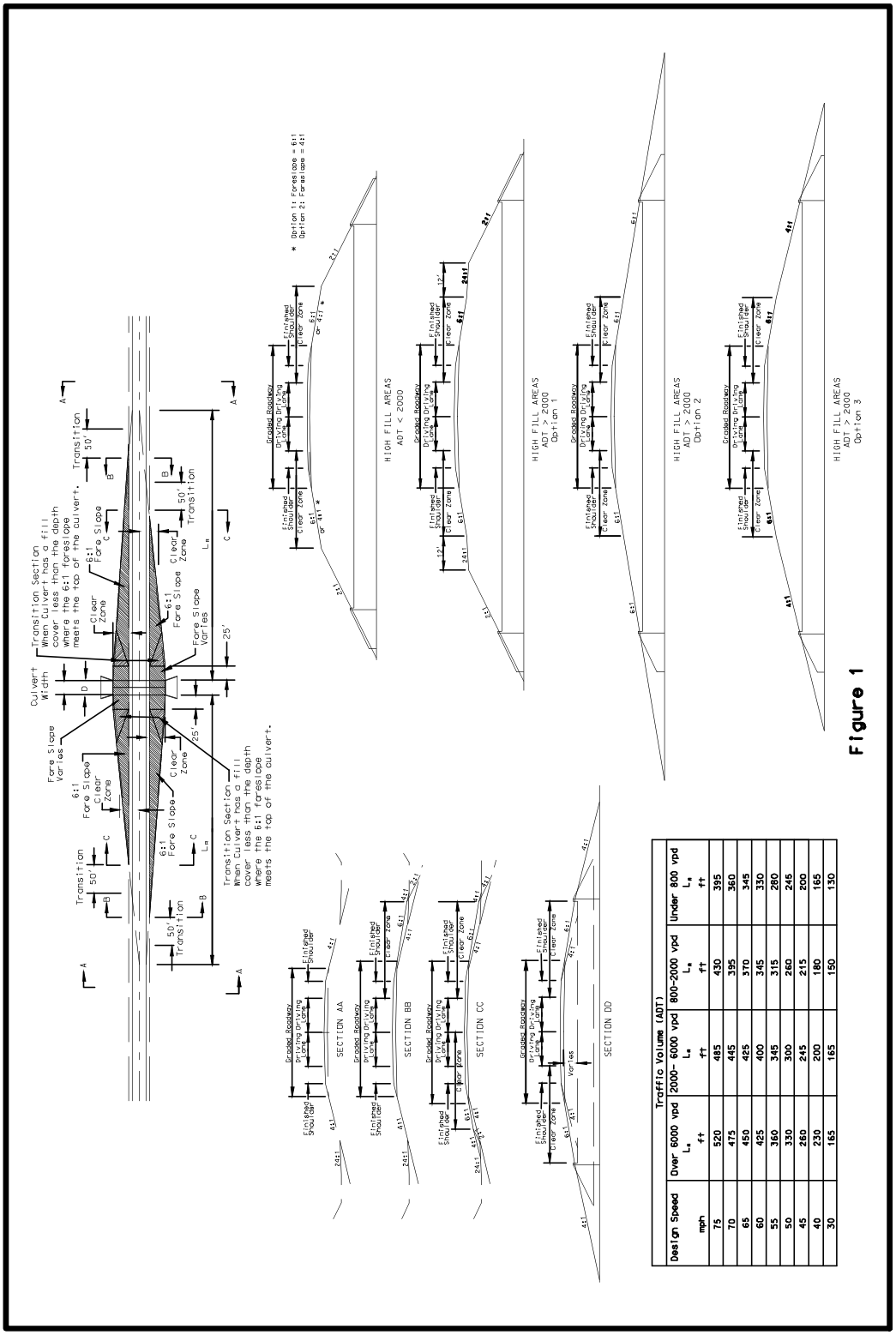
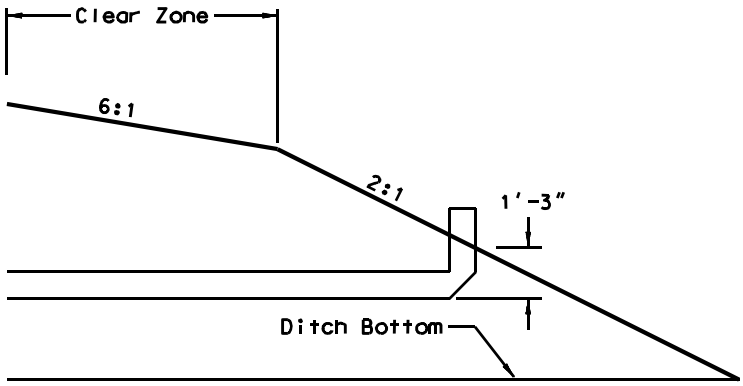


Figure 1

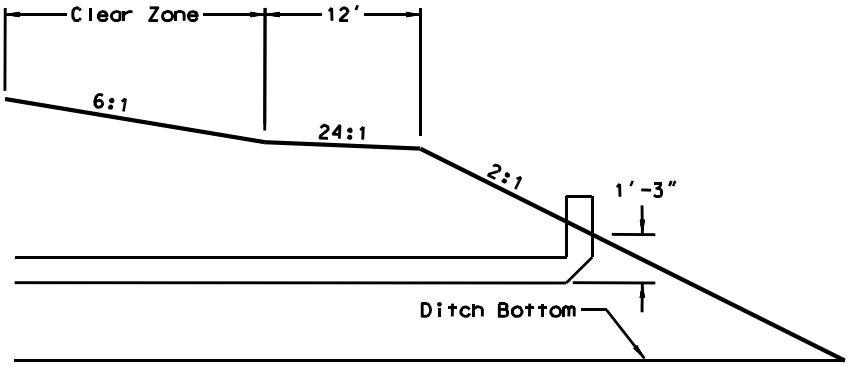
Design Speed	Traffic Volume (ADT)							
	Over 6000 vpd		2000- 6000 vpd		800-2000 vpd		Under 800 vpd	
	L_a		L_a		L_a		L_a	
mph	ft		ft		ft		ft	
75	520		485		430		395	
70	475		445		395		360	
65	450		425		370		345	
60	425		400		345		330	
55	360		345		315		280	
50	330		300		260		245	
45	260		245		215		200	
40	230		200		180		165	
30	165		165		150		130	

If the ADT is less than 2000, the most cost effective option will be to flatten the foreslope to 6:1 out to the clear zone and then 2:1 to the tie point with the parapet of the box culvert (see the following figure.) Check the final cross sections to determine the final length of the box culvert.

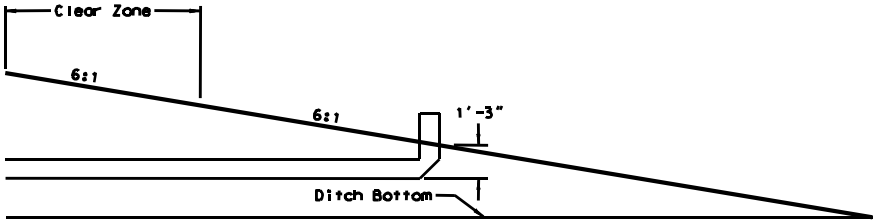


If the ADT is 2000 or greater, one of the following options should be chosen. The option that is the most cost effective and impacts the least amount of right of way and wetlands should be chosen. When choosing an option, consideration should also be given to the cross-section coming into and leaving the box culvert area and to the crash history in that area. Check the final cross sections to determine the final length of the box culvert.

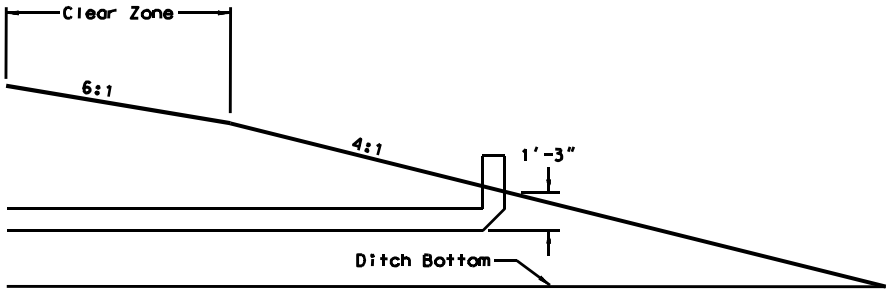
- Option 1: The foreslope to the clear zone will be 6:1, then a 12' bench at 24:1, then 2:1 to the tie in with the parapet.
- Option 2: The foreslope to the clear zone will be 6:1 then continue the 6:1 to the tie in with the parapet.
- Option 3: The foreslope to the clear zone will be 6:1 then 4:1 to the tie in with the parapet.



Option 1



Option 2



Option 3